041701

PROPRIETARY

Date Out EFB: JAN 14 1981

To: Product Manager 16 Miller
TS-767

From Dr. Willa Garner III
Chief, Review Section No. 1
Environmental Fate Branch

Attached please find the environmental fate review of:

Reg./File No.: 476-2134, - 2190, -1995, - 2056

Chemical: Dyfonate

Type Product: Insecticide

Product Name: Dyfonate

Company Name: Stauffer

Submission Purpose: Removal of rotational crop restriction - Onions

ZBB Code: other

Date in: 1/7/81

Date Completed: JAN 14 1981

Deferrals To:

_____ Ecological Effects Branch

_____ Residue Chemistry Branch

_____ Toxicology Branch

ACTION CODE: 305

EFB # 735-738

TAIS (level II)	Days
62	1

1. INTRODUCTION

The PM wishes EFB to consider Stauffer's request to permit rotating onions treated with Dyfonate to carrots. This is a resubmission of this request.

Refer to the EFB evaluation of the same registration numbers dated December 29, 1980.

2. DIRECTIONS FOR USE

2.1 The use directions result in the same amount of ai being applied per acre for the bulb onion use for each of the 4 products (the 10-G, 4-ED, 4-E and the 4-EC). The rate, based on a 20" row spacing, is 1 lb ai/A.

2.2 Do not rotate with carrots. Exception-Carrots may be grown after onions treated the previous season with Dyfonate.

3. DISCUSSION OF DATA

3.1 Determination of Residues of Dyfonate and Dyfonate Oxygen Analog, Western Research Center, October 6, 1972, WRC 72-35R, in Dyfonate submission of 476-2190 dated September 1980.

Procedure

The crop is extracted with benzene. Oils, if present are removed by liquid - liquid partitioning and other interfering compounds are removed via column clean-up with silicic acid. The eluate is analyzed by GC with a rubidium sulfate flame detector.

The limits of detection for dyfonate and its oxygen analog are 0.05 ppm and 0.03 ppm, respectively. Recovery values for fortification at the limit of detection are below:

TABLE I

Recovery of Dyfonate and Oxygen Analog

Crop	Dyfonate (0.05 ppm Added)		Oxygen Analog (0.03 ppm Added)	
	Found, ppm	Recovered %	Found, ppm	Recovered %
Bean plants	0.045	90	0.026	86
Broccoli	0.042	84	0.030	100
Brussels sprouts	0.050	100	0.025	83
Cabbage	0.046	92	0.030	100
Carrots	0.045	90	0.029	97
Cauliflower	0.046	92	0.030	100
Corn ears	0.042	84	0.024	80
Corn plants	0.044	88	0.028	93
Cucurbits (squash)	0.043	86	0.026	86
Green beans	0.041	82	0.028	93
Hops	0.045	90	0.019	64
Lima beans	0.051	102	0.026	86
Mint	0.038	76	0.025	84
Peanuts	0.050	100	0.023	77
Potatoes	0.036	72	0.035	117
Sorghum (fodder)	0.043	86	0.030	100
Sorghum (grain)	0.043	86	0.033	110
Strawberries	0.048	96	0.030	100
Sweet potatoes	0.047	94	0.031	103
Sugar cane	0.049	98	0.031	103
Tobacco	0.046	92	0.026	86
Tomatoes	0.048	96	0.028	93
Turnips	0.046	92	0.026	86
Watermelon	0.045	90	0.026	86

3.2 Summary of Carrot Residue Data Supporting the Removal of the Restriction of Not Rotating Carrots after Onions which were Grown Using Dyfonate, appendix 3 of September 1980 submission.

This section contains the results of several rotational crop studies where carrots follow onions. The studies could not be reviewed because of the following problems:

1) The onions were treated 'in-furrow". Were the carrots planted in the treated soil or outside of the treated area?

2) Other soil degradation products of Dyfonate besides the oxygen analog form. Why were the carrot samples analyzed only for parent and the oxygen analog?

4. RECOMMENDATIONS

4.1 We do not concur with the proposed change in the rotational crop restriction allowing carrots to follow Dyfonate-treated bulb onions for the following reasons:

4.1.1 The onions were treated "in-furrow". We do not know if the carrots were planted in the treated furrow where the Dyfonate residues would be or outside of the area of the treated furrow.

4.1.2 We see no justification for the analysis of only Dyfonate and its oxygen analog in the rotated carrots. The EFB review of July 26, 1973 shows Dyfonate to degrade in soil forming products other than the oxygen analog.

4.1.3 Please note that future rotational crop studies should be supported with soil residue date substantiating the soil fortification rate and the presence of soil degradation products.

Samuel M. Creeger
January 14, 1981
Section #1
EFB/HED